



RCRA Corrective Action Definitions

BACKGROUND: On October 7, 1999, EPA announced its decision to withdraw most of the provisions of the July 27, 1990, Notice of Proposed Rulemaking (NPRM) for corrective action for solid waste management units (SWMUs) at hazardous waste management facilities (64 FR 54604). Commonly known as the Subpart S proposed rule, this rule would have created a comprehensive set of requirements under 40 CFR Part 264, Subpart S of the Resource Conservation and Recovery Act (RCRA) regulations, for conducting corrective action at RCRA facilities. To implement RCRA corrective action, EPA is deferring instead to: 1) its February 16, 1993, final rule on Corrective Action Management Units (CAMUs) and Temporary Units (TUs) (58 FR 8658), and the January 22, 2002, CAMU Amendments (67 FR 2962); 2) its May 1, 1996, Advance Notice of Proposed Rulemaking (ANPRM) on RCRA corrective action (61 FR 19432); 3) its November 30, 1998, final rule on Hazardous Remediation Waste Management Requirements (HWIR-Media) (63 FR 65874); and 4) various policy and guidance documents that the Agency has issued since the 1990 Subpart S proposal. In addition, EPA may issue one or more final rules pertaining to targeted jurisdictional issues, such as the definition of the term "facility" for purposes of RCRA corrective action, and supplemental guidance documents in a number of areas pertaining to RCRA corrective action.

The RCRA corrective action program was mandated by the Hazardous and Solid Waste Amendments of 1984 (HSWA). Congress directed EPA to require "corrective action for all releases of hazardous waste or constituents from any solid waste management unit..." [HSWA 3004(u)] and, where necessary, "that corrective action be taken beyond the facility property boundary..." [HSWA3004(v)]. As EPA indicated in the *Federal Register* notice withdrawing the Subpart S proposed rule, the corrective action program will now be dictated through a combination of final rules, guidance and policy documents. These rules, guidance and policy documents contain key terms that are used to describe corrective action components. For example, EPA's *Amendments to the Corrective Action Management Unit Rule; Final Rule* (67 FR 2962; January 22, 2002) clarified the definition of remediation waste and narrowed the scope of cleanup wastes that may be managed in an on-site CAMU from "remediation waste" to "CAMU-eligible waste." It is the purpose of this Information Brief to review key RCRA corrective action definitions, as established in these documents. This Information Brief is one of a series on RCRA corrective action. It has been revised from a previous Information Brief "RCRA Corrective Action Definitions Under Subpart F and Proposed Subpart S" (EH-231-044, March 94).

STATUTES: RCRA, as amended by the Hazardous and Solid Waste Amendments of 1984 (HSWA).

REGULATIONS: Proposed 40 CFR Part 264, Subpart S ["Corrective Action for Solid Waste Management Units (SWMUs) at Hazardous Waste Management Facilities", 55 FR 30798, July 27, 1990], withdrawn on October 7, 1999 (64 FR 54604); "Corrective Action Management Units and Temporary Units: Corrective Action Provisions Under Subtitle C" (58 FR 8658, February 16, 1993); Advanced Notice of Proposed Rulemaking (ANPRM) "Corrective Action for Releases from Solid Waste Management Units at Hazardous Waste Management Facilities" (61 FR 19432, May 1, 1996); "Hazardous Remediation Waste Management Requirements" (HWIR-Media) (63 FR 65874, November 30, 1998); "Land Disposal Restrictions Phase IV Final Rule" (63 FR 28556, May 26, 1998); "Amendments to the Corrective Action Management Unit Rule" (67 FR 2962, January 22, 2002).

- REFERENCES:**
1. "[*Amendments to the Corrective Action Management Unit Rule; Final Rule \(67 FR 2962\)*](#)," U.S. Department of Energy (DOE), Office of Environmental Policy and Guidance, RCRA/CERCLA Division (EH-413), Regulatory Bulletin, July 2002.
 2. "[*RCRA Corrective Action Program Guide \(Interim\)*](#)," DOE, Office of Environmental Policy and Assistance, RCRA/CERCLA Division (EH-413), Guidance Manual, DOE/EH- 0323, May 1993.
 3. "[*Corrective Action Management Units and Temporary Units - CAMU/TU Final Rule Issued*](#)," Regulatory Bulletin, DOE Office of Environmental Guidance, RCRA/CERCLA Division, EH-231, May 12, 1993.
 4. "[*Management of Remediation Waste Under RCRA*](#)," U.S. Environmental Protection Agency, Memorandum to RCRA/CERCLA Senior Policy Managers and Regional Counsels, EPA530-F-98-026, October 1998.
 5. "[*RCRA Cleanup Reforms*](#)," U.S. Environmental Protection Agency, EPA530-F-99-018, July 1999.
 6. "[*RCRA Cleanup Reforms; Reforms II: Fostering Creative Solutions*](#)," U.S. Environmental Protection Agency, EPA530-F-01-001, January 2001.

What are the RCRA Section 3004(u) and (v) corrective action requirements?

RCRA Section 3004(u) provides EPA with the authority to require corrective action to address releases of hazardous wastes or hazardous waste constituents from any solid waste management unit (SWMU) at a RCRA permitted treatment, storage and disposal facility (TSDF) to any environmental medium. EPA uses the RCRA Section 3004(v) authority to require corrective action for releases that have migrated beyond the boundary of a permitted or interim status facility.

What is a RCRA Section 3008(h) Corrective Action Order?

If EPA or the authorized State determines there has been a release of a hazardous waste or hazardous waste constituents at an interim status facility (i.e., a facility seeking a RCRA permit), RCRA Section 3008(h)(1) authorizes EPA or the authorized State to issue an administrative order requiring corrective action or other measures. While RCRA corrective action typically applies specifically to SWMUs at permitted TSDFs, EPA can apply similar corrective action requirements at interim status facilities where there has been a release of a hazardous waste or hazardous waste constituents. The specific requirements for corrective action at an interim status facility will be specified in a RCRA Section 3008(h) Order. Alternatively, EPA may compel corrective action through a permit Schedule of Compliance, especially if the permit is expected to be issued in the near term. EPA also has the authority to issue a 3008(h) Order to permitted facilities.

What is the definition of “corrective action?”

The definition of corrective action is dependent, in part, on the context in which it is used. The following paragraph is quoted from the 1996 ANPR (61 FR 19432, May 1, 1996):

More than 5,000 facilities are subject to RCRA corrective action, over three times the number of sites on CERCLA's National Priorities List (NPL). The degree of investigation and subsequent corrective action necessary to protect human health and the environment varies significantly across these facilities. Some facilities may require no cleanup at all or only minor corrective action, while others are as complex and highly contaminated as any Superfund site. To account for the variety of corrective action facilities and site-specific circumstances, EPA has emphasized a flexible,

facility-specific approach to corrective action. Few cleanups will follow exactly the same course; therefore, program implementors and facility owners/operators must be allowed significant latitude to structure the corrective action process, develop cleanup objectives, and select remedies appropriate to facility-specific circumstances. At the same time, a number of basic operating principles guide corrective action program implementation and development.

The term “corrective action” typically refers to the cleanup process or program under RCRA and all activities related to the investigation, characterization, and cleanup of a release of hazardous wastes or hazardous waste constituents from solid waste management units (SWMUs) at a permitted or interim status TSDF to any environmental medium. However, the term may also refer to a specific action taken to remediate a SWMU or SWMUs at an individual facility.

What is corrective action under Subpart F?

At the time the HSWA corrective action provisions were enacted, corrective action for releases to groundwater from RCRA regulated units (see definition below) was already required under 40 CFR 264 Subpart F. The 1984 HSWA amendments extended corrective action authority at TSDFs to all waste management units that received solid or hazardous waste at any time. In the legislative history of RCRA Section 3004(u), Congress noted that one purpose of the new corrective action requirements was to ensure that RCRA facilities did not become Superfund cleanup sites.

What is the definition of “facility?”

The definition of “facility” has undergone some changes as the corrective action program has evolved, as indicated in the 1996 ANPR (61 FR 19432, May 1, 1996). Under RCRA Section 3004(u), corrective action is required for releases from solid waste management units at facilities seeking RCRA permits. The 1990 Subpart S proposal (55 FR 30798, July 27, 1990) defined “facility” as “all contiguous property under the control of the owner or operator seeking a permit under Subtitle C of RCRA.” This definition was finalized when the rule on corrective action management units (CAMUs) and temporary units (TUs) was promulgated (58 FR 8658, February 16, 1993) and is now codified at 40 CFR 260.10. For reasons discussed in the 1990 proposal, the term

"facility" for corrective action purposes is separate and substantively different from the facility definition for other RCRA purposes.

A number of issues continue to arise regarding the application of the facility definition. A common issue is whether or not a certain parcel is considered "contiguous" for purposes of the corrective action facility definition. A common scenario involves two geographically separated parcels under common ownership that are connected by ditches, bridges, or other links under the control of the facility owner/operator. The 1990 Subpart S proposal requested comment on how the definition of facility should apply where a large parcel is owned by one party who leases a small portion to another party for a RCRA-permitted facility. In the Subpart S proposal, EPA indicated that it would consider corrective action requirements to extend to SWMUs throughout the larger parcel. At the same time, EPA recognized that there are differing views as to the policy merits of this interpretation and in the 1996 ANPR (61 FR 19432), invited further comment on this issue.

The definition of facility received further attention in the FR notice announcing the withdrawal of proposed Subpart S [October 7, 1999 (64 FR 54604)]. As indicated in the withdrawal notice, the only exceptions to the decision to withdraw the proposed Subpart S rule related to two jurisdictional issues [as well as those aspects of the proposed rule that were promulgated on February 16, 1993 (58 FR5658), relating to CAMUs and TUs]. The jurisdictional issues relate to the definition of facility for corrective action purposes, and the question of who is responsible for corrective action when there is a transfer of facility property. EPA expects to issue a final rule on these issues, taking into account comments received on the Subpart S proposed rule, and the ANPR. It is expected that EPA will modify the existing definition of facility established in 40 CFR 260.10 for corrective action purposes as a result of this final rule.

What is the definition of "regulated unit?"

RCRA regulated units are defined in 40 CFR 264.90 as "surface impoundments, waste piles, land treatment units, and landfills that received hazardous waste after July 26, 1982", and are a subset of the universe of solid waste management units (SWMUs). At the time the new corrective action provisions were enacted, corrective action for releases to groundwater from RCRA regulated units was already required under 40 CFR 264 Subpart F. RCRA corrective action for

releases to other media from regulated units may be taken under the auspices of the RCRA corrective action program.

What is the definition of "SWMU?"

In the Subpart S proposed rule (55 FR 30798, July 27, 1990), EPA proposed to define the term "solid waste management unit" or "SWMU" to mean, "Any discernible unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at a facility at which solid wastes have been routinely and systematically released."

The term SWMU is also discussed in the ANPR (61 FR 19432, May 1, 1996). As indicated in the 1996 ANPR, and in the 1990 proposal, not all areas where releases have occurred are considered SWMUs. In the 1990 proposal, EPA indicated a one-time spill which had been adequately cleaned up would not constitute a SWMU; on the other hand, a location at which wastes or other materials were released in a routine and systematic manner (such as a loading area where minor spills or leaks occurred routinely over time) would be a SWMU. To reflect a more holistic approach, permits and orders often use the term "area of concern" to refer to releases which warrant investigation or remediation under the authorities discussed above, regardless of whether they are associated with a specific SWMU, as the term is currently used. For example, when an overseeing agency believes one-time spills of hazardous waste or hazardous constituents have not been adequately cleaned up, these releases are often addressed as areas of concern.

SWMUs include regulated units as well as units used to manage nonhazardous solid wastes (i.e., wastes subject to RCRA Subtitle D). Examples of SWMUs include landfills, surface impoundments, sumps, underground piping, land application areas, incinerators, waste piles, and storage areas. By definition, all regulated units are identified as SWMUs.

What is the definition of "release?"

The definition of release for corrective action was first discussed in the 1985 HSWA codification rule (50 FR 28702, July 15, 1985). In the 1985 rule, EPA wrote that the definition of release for corrective action should, at a minimum, be as broad as the definition of release under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), commonly known as Superfund. Accordingly, EPA has

interpreted the term release to mean "any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping or disposing into the environment." (See, 50 FR 28713, July 15, 1985.) In the 1990 Subpart S proposal (55 FR 30798, July 27, 1990), EPA clarified that the definition of release also includes abandoned or discarded barrels, containers, and other closed receptacles containing hazardous wastes or constituents and that it could include releases that are permitted under other authorities, such as the Clean Water Act. As indicated in the 1996 ANPR (61 FR 19432, May 1, 1996), EPA continues to adhere to these interpretations of the term "release."

The definition of release under the proposed Subpart S applies only to hazardous wastes or hazardous waste constituents; it does not include releases of any material that is not a hazardous waste or hazardous waste constituent. The definition of release under CERCLA does not have this restriction.

What is the definition of "hazardous waste?"

RCRA Section 3004(u) requires corrective action for releases of "hazardous wastes or constituents." As discussed in the 1990 proposal (55 FR 30798, July 27, 1990), and in the 1996 ANPR (61 FR 19432, May 1, 1996), EPA interprets the term "hazardous waste," as used in RCRA Section 3004(u) to include all wastes that are hazardous within the statutory definition in RCRA Section 1004(5). The statutory definition of hazardous waste in RCRA Section 1004(5) states that "...a hazardous waste is any solid waste, or combination of a solid waste, which because of its quantity, concentration, or physical, chemical, or infectious characteristics, may cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness; or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed...." The definition of hazardous waste under RCRA corrective action may therefore apply to materials that are not otherwise regulated under the current RCRA regulations as listed or identified by EPA pursuant to RCRA Section 3001.

What is the definition of "hazardous waste constituent?"

As indicated above under the definition of hazardous waste, RCRA Section 3004(u) requires corrective action for releases of "hazardous wastes or constituents." As discussed in the 1990 proposal (55

FR 30798, July 27, 1990), and in the 1996 ANPR (61 FR 19432, May 1, 1996), EPA views the phrase "or constituents" as significant in two ways. First, it indicates that Congress was particularly concerned that, for the broad category of wastes that might be "hazardous" within the statutory definition, the corrective action authority should be used to address the specific subset of "hazardous constituents." Second, it indicates that the corrective action authority was not intended to be limited to hazardous waste, and extends to hazardous constituents regardless of whether they also fall within the term "hazardous waste," or whether they were derived from hazardous waste. Under this interpretation, hazardous constituents that were contained within nonhazardous solid wastes may be addressed through RCRA corrective action. Therefore, under RCRA corrective action, owners or operators may be required to clean up releases of constituents that are included in either 40 CFR Part 261, Appendix VIII or 40 CFR Part 261, Appendix IX. However, they may also be required to address other constituents providing that they meet the statutory definition of hazardous waste, as discussed in the definition above.

What is the definition of "point of compliance?"

As proposed in 1990 (55 FR 30798, July 27, 1990), the point of compliance (POC) is the location or locations at which media cleanup levels are achieved. The 1996 ANPR (61 FR 19432, May 1, 1996), indicates that "In the absence of final corrective action regulations specifically addressing points of compliance, program implementors and facility owners/operators develop POCs on a site-specific basis." The 1996 ANPR goes on to provide guidance on how the POC should be established as a function of media (61 FR 19432):

- □ For air releases, program implementors and facility owners/operators have generally used the location of the person most exposed, or other specified point(s) of exposure closer to the source of the release.
- □ For surface water, program implementors and facility owners/operators have routinely established the POC at the point at which releases could enter the surface water body; if sediments are affected by releases to surface water, a sediment POC is also established.
- □ Points of compliance for soils are generally selected to ensure protection of human and environmental

receptors against direct exposure and to take into account protection of other media from cross-media transfer (e.g., via leaching, runoff or airborne emissions) of contaminants.

- For groundwater, program implementors and facility owners/operators generally set the POC throughout the area of contaminated groundwater or, when waste is left in place, at and beyond the boundary of the waste management area encompassing the original source(s) of groundwater contamination. This approach to the groundwater POC is generally referred to as the “throughout the plume/unit boundary POC.” This approach is consistent with the groundwater POC described in the preamble to the Superfund program's National Oil and Hazardous Waste Contingency Plan (NCP, pages 8713 and 8753, Federal Register March 8, 1990). EPA recommends consideration of the following factors when developing a site-specific groundwater POC: proximity of sources of contamination; technical practicability of groundwater remediation; vulnerability of the groundwater and its possible uses; and, exposure and likelihood of exposure and similar considerations.

Developing site-specific points of compliance generally continues to be an area of discussion and debate.

What is the definition of “action level?”

Action levels are also discussed in the 1996 ANPR (61 FR 19432, May 1, 1996):

Action levels are health- or environmental-based concentrations derived using chemical-specific toxicity information and standardized exposure assumptions. Action levels are often established at the more protective end of the risk range (e.g., 10^{-6}) using conservative exposure and land use assumptions; however, action levels based on less conservative assumptions could be appropriate based on site-specific conditions. For example, if the current and reasonably anticipated future uses of a site are industrial, an action level based on industrial exposure scenarios could be appropriate.

At certain facilities subject to corrective action, contamination will be present at concentrations that may not justify further action. For this reason, the concept of action levels can be used as a trigger

mechanism for determining that further corrective action activities are unnecessary, and conversely, that additional actions (e.g., additional investigations, evaluation of remedial alternatives, site-specific risk assessments) are appropriate. Action levels are most beneficial when they are available during the planning stages of site investigations. In the 1990 proposal (55 FR 30798, July 27, 1990), EPA indicated that it would be advantageous to include action levels in corrective action permits. In this manner, facility owners/operators and the public would be provided an indication, up-front, of contaminant concentrations that would likely trigger additional study or corrective measures.

Action levels can be developed on a facility-specific basis or can be taken from standardized lists. Some states and EPA Regions have developed standardized lists of action levels (or cleanup levels) for RCRA corrective action facilities and other cleanup sites. Standardized lists of action levels may not be appropriate to every situation, however. Action levels are often based on residential land-use assumptions which may not be appropriate at all corrective action facilities, especially large Federal facilities like DOE. Program implementors and facility owners/operators should ensure that action levels used at DOE facilities reflect up-to-date toxicity information and modeling techniques and that action level assumptions are consistent with site-specific conditions and present and future land use.

What is the definition of “media cleanup standards?”

Media cleanup standards are also discussed in the 1996 ANPR (61 FR 19432, May 1, 1996):

The term “media cleanup standards” typically refers to broad cleanup objectives; it often includes the more specific concepts of “media cleanup levels,” “points of compliance,” and “compliance time frames. The more specific term, “media cleanup levels” typically refers to site- and media-specific concentrations of hazardous constituents, developed as part of the overall cleanup standards for a facility. Media cleanup standards (and levels) should reflect the potential risks of the facility and media in question by considering the toxicity of the constituents of concern, exposure pathways, and fate and transport characteristics.

As further indicated in the 1996 ANPR (61 FR 19432, May 1, 1996), EPA intends to cleanup sites in

a manner consistent with available, protective, risk-based media cleanup standards (e.g., MCLs and state cleanup standards) or, when such standards do not exist, to clean up to protective site-specific media cleanup standards. Both approaches require a site-specific risk assessment. When standardized levels are used (e.g., MCLs, state cleanup standards), the assumptions used to develop the cleanup values should be consistent with the site-specific conditions at the facility in question.

As discussed in the NCP and the 1990 Subpart S proposal (55 FR 30798, July 27, 1990), EPA's risk reduction goal is to reduce the threat from carcinogenic contaminants such that, for any medium, the excess risk of cancer to an individual exposed over a lifetime generally falls within a range from 10^{-6} to 10^{-4} . For non-carcinogens, the hazard index (the level of exposure to one or more chemicals from significant exposure pathways in a given medium below which it is unlikely for even sensitive populations to experience adverse health effects) should generally not exceed one (1). EPA's preference, all things being equal, is to select remedies that are at the more protective end of the risk range. The ANPRM (61 FR 19432, May 1, 1996) goes on to suggest that program implementors and facility owners/operators should generally use 10^{-6} as a point of departure when developing site-specific media cleanup standards. However, given the diversity of the corrective action universe and the emphasis on consideration of site-specific conditions such as exposure, uncertainty, technical limitations and land use, other risk reduction goals may be appropriate at many corrective action facilities. This is especially the case with large Federal facilities like most DOE facilities.

What is the definition of a "CAMU?"

The CAMU/TU final rule (58 FR 8658, February 16, 1993) defined a CAMU as "a land area within a facility regulated under RCRA Subtitle C (i.e., facilities with permitted or interim status) that is designated by the EPA Regional Administrator or the authorized State for the purpose of managing remediation wastes generated from corrective action activities" (40 CFR 260.10). The November 30, 1998, final HWIR-Media rule (63 FR 65874) retained the CAMU regulations, but broadened their applicability. Specifically, the EPA wanted to clarify that a CAMU can be designated at a remediation-only facility that operates under a remedial action plan (RAP) or other permit, even though such a facility is not subject to the corrective action provisions as codified in 40 CFR 264.101 or RCRA section 3008(h). The EPA also wanted to clarify that CAMUs are not restricted to wastes generated solely through specific RCRA regulatory mechanisms, or to clean-up wastes generated solely at RCRA treatment, storage, or disposal facilities. Accordingly, the HWIR-Media final regulations changed the CAMU definition to mean "an area within a facility that is used only for managing remediation wastes for

implementing corrective action or cleanup at the facility" [63 FR 65880; 63 FR 65937, codified at 40 CFR 260.10].

Furthermore, EPA in the CAMU Amendments final rule (67 FR 2962; January 22, 2002) did the following:

- □ relocated the definition of CAMU to 40 CFR 264.552(a);
- □ established as "Grandfathered CAMUs" those CAMUs that were approved before April 22, 2002, or for which substantially complete RCRA permit applications (or equivalents) were submitted to the permitting agency on or before November 20, 2000; and
- □ clarified that Grandfathered CAMUs can continue operating under the 1993 CAMU rule, including the receipt of remediation waste; whereas, other CAMUs are subject to more detailed design and operating standards and new treatment standards for "CAMU-eligible waste."

It is worth noting that placing remediation wastes into or within Grandfathered CAMUs, or CAMU-eligible wastes into or within other CAMUs does not constitute land disposal (see 58 FR 8665) [40 CFR 264.552(a)(4)], and the land disposal restrictions (LDRs) do not apply to such activities. In addition, consolidation or placement of CAMU-eligible waste into disposal units located within CAMUs need not be designed in accordance with minimum technology requirements (MTRs) [40 CFR 264.552(a)(5)], such as liners and leachate collection systems.

What is the definition of a TU?

Unlike the definition of CAMU, neither the November 30, 1998, HWIR-Media final rule (63 FR 65874) nor the January 22, 2002, CAMU Amendments final rule changed the definition of a TU. The February 16, 1993, final CAMU/TU rule defined a TU as "a tank or container storage unit, located within a facility's boundaries, but not necessarily within a CAMU's boundaries, that the EPA Regional Administrator or the authorized State has designated to be used for treating and storing remediation wastes generated at the facility". A TU may not be operated for longer than one year without an approved extension (40 CFR 264.553).

The advantage of designating a container or tank as a TU is that EPA or the authorized State may impose standards that are less stringent than the full 40 CFR 264 standards and that utilization of TUs will facilitate remediation at permitted facilities with continuing releases, facilitate corrective action beyond the facility boundary, aid facilities in complying with RCRA 3008(h) orders, and promote the development and implementation of innovative treatment technologies.

What are “remediation wastes”?

CAMUs and TUs were units created specifically for the management of “remediation wastes.” Hence, the definition of remediation wastes is central to the applicability of CAMUs and TUs. The February 16, 1993, final CAMU/TU rule (58 FR 8658) defined remediation waste as “those wastes that are managed for the purpose of implementing corrective action and include the following: 1) those that are solid and hazardous wastes and 2) any remediation-derived debris and media (including groundwater, surface water, soils, and sediments) that contain listed hazardous wastes or exhibit a hazardous waste characteristic.” The February 16, 1993, final CAMU/TU rule indicated that remediation wastes must originate within the facility boundary, unless they result from remediation of releases that have migrated beyond the facility boundary (58 FR 8664) (40 CFR 260.10).

In the November 30, 1998, HWIR-Media final rule, EPA modified this definition to clarify that remediation wastes can include wastes managed at off-site locations, even if they are removed from their site of origin. Under the new definition, remediation waste was defined as “all solid and hazardous wastes, and all media (including groundwater, surface water, soils, and sediments) and debris that contain listed hazardous wastes or that themselves exhibit a hazardous characteristic and are managed for implementing cleanup.” [63 FR 65937, codified at 40 CFR 260.10].

Following promulgation of the HWIR-Media rule (and in response to the proposed CAMU Amendments (65 FR 51080; August 22, 2000), concerns surfaced regarding the restrictive clause “that contain listed hazardous wastes or that themselves exhibit a hazardous characteristic” Commenters felt it might unintentionally limit the scope of remediation waste to *hazardous* media and debris only. Thus, in the CAMU Amendments final rule, EPA again revised the definition by deleting this phrase (67 FR 2966-67; January 22, 2002). The current definition includes “all solid and hazardous wastes, and all media (including ground water, surface water, soils, and sediments) and debris, that are managed for implementing cleanup.”

Wastes (e.g., drilling muds) generated as part of site investigations are also considered to be remediation wastes. The definition of remediation waste excludes “new” or “as-generated” wastes (either hazardous or nonhazardous) that are generated from other ongoing facility operations that are not related to corrective action.

What is “CAMU-eligible waste”?

Basing it on the redefinition of remediation waste, EPA established a separate subcategory of waste to more specifically define those remediation wastes that can be placed in CAMUs. The EPA calls this subcategory “CAMU-eligible waste,” which includes “all solid and

hazardous wastes, and all media (including groundwater, surface water, soils, and sediments) and debris, that are managed for implementing cleanup” (40 CFR 264.552(a)(1)). The definition, however, has additional restrictions explicitly identifying those wastes that *cannot* be placed in CAMUs. Waste excluded from CAMUs include as-generated waste (except nonhazardous as-generated waste used to facilitate CAMU treatment or unit performance) and hazardous waste found above ground in intact or substantially intact non-land-based units.

What is the definition of “conditional remedy”?

Conditional remedies were first proposed as part of EPA’s Subpart S proposed rule (55 FR 30803, July 27, 1990), which, as indicated above, has been withdrawn (64 FR 54604, October 7, 1999). The EPA developed the concept of conditional remedies to provide remedial options that can be utilized when prompt remedial action will reduce risks to acceptable levels, or where final cleanup is impracticable. A conditional remedy is a type of corrective action in which short-term action is used to control risk and contamination is allowed to remain, until definitive (final) remedies, if appropriate, can be phased in over time. A conditional remedy would be especially appropriate where prompt remedial action can reduce risk to levels acceptable for current land uses and where final cleanup is technically impracticable. Conditional remedies would enable the regulated community to focus resources on the most pressing environmental problems at a facility.

The 1996 ANPRM and recent EPA guidance or policy documents do not talk specifically of conditional remedies. The concept is still valid, however. But instead of using the term “conditional remedies,” EPA is deferring to its Stabilization Initiative (October 25, 1991). In accordance with the stabilization initiative, near-term activities may be used at individual SWMUs to control or abate threats to human health and the environment and prevent or minimize further contaminant migration, rather than focusing on long-term final solutions. For example, it will often be reasonable to initiate prompt cleanup to levels consistent with current use, but final or more complete cleanup can be deferred.

Stabilization and conditional remedies are therefore essentially equivalent concepts. While EPA is no longer using the term “conditional remedies,” some states may be using the term to describe stabilization actions.

What is a voluntary cleanup?

The EPA indicated in the 1996 ANPRM (61 FR 19432, May 1, 1996) that it strongly encourages voluntary corrective actions. Although not defined, voluntary actions are assumed to mean those actions that could be compelled through RCRA permits or orders, but that are taken outside these authorities. With this broad interpretation, voluntary actions could range from conducting limited or extensive

site investigations to actually selecting and implementing remedies. As discussed in the 1990 Subpart S proposal (55 FR 30798, July 27, 1990), voluntary cleanups have a number of advantages, including timeliness, flexibility, and efficient use of facility owner/operator and Agency resources. Because RCRA's procedural barriers have delayed cleanups, EPA and the states plan to take significant steps to address this concern and to further facilitate voluntary actions. The primary concern of owners and operators has been that subsequent Federal or State action under RCRA or CERCLA could be taken despite best efforts under a voluntary program.

What is the stabilization initiative?

The stabilization initiative was discussed at length in the 1996 ANPRM (61 FR 19432, May 1, 1996). EPA's early implementation of the corrective action program focused on final, comprehensive cleanups at a limited number of facilities. As EPA and states gained more experience, it became clear that final cleanups were often difficult and time-consuming to achieve and that an emphasis on final remedies was diverting limited resources from addressing ongoing releases and reducing risk. As a result, in 1991, EPA established the stabilization initiative (EPA, Office of Solid Waste memorandum to Regional Administrators, "Managing the Corrective Action Program for Environmental Results: The RCRA Facility Stabilization Effort," October 25, 1991). The goal of the stabilization initiative was to increase the rate of corrective actions by focusing on near-term activities to control or abate threats to human health and the environment and prevent or minimize the further spread of contamination. Through the stabilization initiative, EPA sought to achieve an increased overall level of environmental protection by implementing a greater number of actions across many facilities rather than following the more traditional process of pursuing final, comprehensive remedies at a few facilities.

As EPA indicated in the 1991 guidance memorandum, controlling exposures or the migration of a release may stabilize a facility, but it does not necessarily mean that a facility is completely cleaned up. Contamination may still be present and additional investigations or remediation may eventually be required; however, stabilized facilities should not present unacceptable near-term risks to human health or the environment and program implementors and facility owners/operators can shift their resources (either at the stabilized facility or among facilities) to additional health or environmental concerns. Stabilization actions should be a component of, or at least consistent with, final remedies.

What is a presumptive remedy?

Presumptive remedies were discussed in the 1996 ANPRM (61 FR 19432, May 1, 1996). The Superfund program began developing presumptive remedy guidance

in 1991 to use past experience to streamline cleanups. Presumptive remedies are preferred technologies for common categories of sites, based on historical patterns of remedy selection and EPA's scientific and engineering evaluation of performance data on technology implementation. Presumptive remedies may be used at appropriate sites, including RCRA facilities, to help ensure consistency in remedy selection and implementation and to reduce the cost and time required to investigate and remediate similar types of sites. Several presumptive remedy guidance documents are available, including: *Presumptive Remedies: Policies and Procedures*; *Presumptive Remedy for CERCLA Municipal Landfill Sites*; *Presumptive Remedies: Site Characterization and Technology Selection for CERCLA Sites with Volatile Organic Compounds in Soils*; *Presumptive Remedies for Soils, Sediments and Sludges at Wood Treating Sites*, and metals in soils.¹ Additional presumptive remedy guidance addresses sites with groundwater contamination.

What are environmental indicators?

The use of environmental indicators was discussed in the 1996 ANPRM (61 FR 19432, May 1, 1996). The EPA, and especially the States, were often charged with focusing too much on administrative processes rather than actual cleanups. In response to this concern and the Government Performance and Results Act (GPRA) of 1993, EPA is now focusing management of the corrective action program on environmental indicators. Two specific environmental indicators have been developed for the corrective action program. These indicators are: Human Exposures Controlled Determination and Groundwater Releases Controlled Determination. These environmental indicators are facility-wide measures and do not apply to individual SWMUs or areas of concern. Human Exposures Controlled is attained when there are no unacceptable risks to humans due to releases of contaminants at or from the facility subject to RCRA corrective action. Groundwater Releases Controlled is attained when the migration of groundwater contamination at or from the facility across designated boundaries (these boundaries may be facility boundaries or specified boundaries within a facility) is controlled.

The environmental indicators are not tied to specific program activities or paperwork deliverables. In the course of implementing final remedies, the environmental indicators will be achieved; however, the implementation of stabilization measures can also result in achieving the environmental indicators. The EPA is striving to make the corrective action program more performance based. Because the environmental indicators focus on results, they can serve well as performance measures for remedial

1. *Presumptive Remedy for Metals-In-Soils Sites*, OSWER Directive 9355.072FS, September 30, 1999, was developed in conjunction with DOE and can be downloaded from the OEPA website at <http://tis-nt.eh.doe.gov/oeпа/>.

activities. Further guidance on the environmental indicators is available in an EPA factsheet "RCRA Cleanup Reforms," EPA530-F-99-018, July 1999, and in a July 29, 1994, memorandum "RCRIS Corrective Action Environmental Indicator Event Codes CA725 and CA750." EPA has developed additional guidance on environmental indicators, which is available at <http://www.epa.gov/epaoswer/hazwaste/ca/eis.htm>.

What is technical impracticability?

Technical impracticability was discussed at length in the 1996 ANPRM (61 FR 19432, May 1, 1996). It is recognized that remediation of contaminated media to a desired media cleanup standard can, in certain situations, be technically impracticable. Congress formally recognized technical impracticability (TI) in the CERCLA statute and EPA incorporated the concept in the National Contingency Plan and the 1990 Subpart S proposal (proposed 40 CFR 264.525(d) and 264.531). Technical impracticability decisions may be made for any medium; however, contaminated groundwater has received in the most TI-related attention. The single greatest cause for technical impracticability determinations during groundwater restoration has been the presence of dense non-aqueous phase liquids (DNAPLs). To provide a framework for addressing technical impracticability, EPA issued "Guidance for Evaluating the Technical Impracticability for Ground-Water Restoration" (EPA/540-R-93-080, September 1993). The Office of Environmental Policy and Guidance (OEPG), RCRA/CERCLA Division issued additional guidance in August 1998 ["Technical Impracticability Decisions for Ground Water at CERCLA Response Action and RCRA Corrective Action Sites", DOE/EH-413/9814 (August 1998), which may be downloaded from the OEPA website under "Policy and Guidance" at <http://tis-nt.eh.doe.gov/oeпа/>].

The possibility that certain remedies may be technically impracticable should be considered throughout the remediation process -- from the early stages of developing a conceptual site model through all stages remedy implementation. When possible, determinations of technical impracticability should be made early in the remediation process and included in RCRA corrective action remedial decision documents (permits and orders). The EPA stresses, in the 1996 ANPRM, that by recognizing technical impracticability, it is not scaling back the general goal of returning contaminated groundwater to beneficial uses. Where technical impracticability is determined, the EPA expects to require an alternative remedial strategy that is: (1) technically practicable; (2) consistent with the overall objectives of the remedy; and (3) controls the source(s) of contamination, and human and environmental exposures. A determination of TI does not release a facility owner/operator from corrective action obligations.

What is natural attenuation?

Natural attenuation was discussed in the 1996 ANPRM (61 FR 19432, May 1, 1996). As discussed in the CERCLA NCP, a natural attenuation remedy uses natural processes such as biodegradation, dispersion, dilution, and/or adsorption to achieve remedial goals (55 FR 8734, March 8, 1990.) EPA's three major remedial programs (i.e., Superfund, RCRA Corrective Action Program, and the Underground Storage Tank Program) recognize that natural attenuation, in certain circumstances, can be an acceptable component of remedial actions for contaminated groundwater ["Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites", EPA Directive 9200.4-17P, April 21, 1999]. Natural attenuation remedies are not "no action" remedies. Natural attenuation should be evaluated, where it might be applicable, along with, and in a manner similar to other potential remedial approaches. As in any other remedial approach, the goal for a remedy involving natural attenuation is to be protective of human health and the environment.

What is performance-based RCRA corrective action?

Performance-based RCRA corrective action approaches were discussed in the 1996 ANPRM (61 FR 19432, May 1, 1996). The discussion focused on application of a performance-based approach for remedy selection and implementation only. The EPA indicated that at some facilities, the selection of corrective measures does not have to be submitted to an overseeing agency for review and approval in favor of a performance-based approach. Using the performance-based approach, EPA or a state might oversee the facility to ensure that adequate remedial goals are developed for the facility. After the remedial goals undergo public review and comment, and are approved by the overseeing agency, the facility owner/operator would design and implement a remedy sufficient to meet the remedial goals without direct agency oversight.

The 1996 ANPRM also discussed the performance-based approach in the context of corrective measures implementation. When using a performance-based approach to corrective measures implementation, the overseeing agency would work with the facility owner/operator during remedy selection to develop remedial goals for the facility. Following public review and comment and approval of a remedy and remedial goals, the facility owner/operator would be tasked with designing and implementing the chosen remedy in a manner which would meet the remedial goals. While the overseeing agency would review and approve the remedy and remedial goals and be involved in developing monitoring systems or other means of measuring compliance with the remedial goals, it would not necessarily be involved with the details of remedy design, construction and implementation. A performance-based approach to remedy implementation emphasizes that the facility owner/operator, not the

overseeing agency, is responsible for designing and implementing a successful remedy.

What is the concept of parity?

The concept of parity was discussed at length in the 1996 ANPRM (61 FR 19432, May 1, 1996), and in an EPA memorandum from the Assistant Administrator to RCRA/CERCLA Regional Policy Managers, "Coordination Between RCRA Corrective Action, and Closure, and CERCLA Site Action", September 24, 1996). EPA recognized that most facilities in the RCRA corrective action universe are potentially subject to cleanup under numerous cleanup authorities, including state or Federal Superfund authorities. Overlapping application of these authorities has caused confusion and concern in the regulated community, and resources are wasted in trying to meet the administrative requirements of multiple cleanup authorities. In the 1990 Subpart S proposal (55 FR 30798, July 27, 1990), EPA stated that one of its primary objectives was "to achieve substantial consistency with the policies and procedures" of the Superfund remedial program. The logic behind this concept is that, since both programs address cleanup of potential and actual releases, both programs should arrive at similar remedial solutions. The EPA's position is that any procedural differences between RCRA and CERCLA should not substantively affect the outcome of remediation.

RCRA and CERCLA program implementors should be able to defer cleanup activities from part of all of a site to one program with the expectation that no further cleanup will be required under the other program. This is referred to as the concept of parity. The same principle should apply to authorized state corrective action programs and state CERCLA analogous programs. Over half the states have Superfund-like authorities. In some cases, these authorities may be substantively equivalent in scope and effect to the Federal CERCLA program, and therefore are likely to be substantially equivalent to the RCRA corrective action program.

What is a remedial action plan (RAP)?

The HWIR-Media final rule (63 FR 65874, November 30, 1998) established a new type of RCRA permit, a Remedial Action Plan (RAP). The RAP offers an alternative to the traditional RCRA permit and is applicable specifically to hazardous remediation wastes only. The RAP employs a streamlined permitting process for governing treatment, storage, and disposal of hazardous remediation wastes. The process for obtaining a RAP is delineated in 40 CFR Part 270, Subpart H (63 FR 65941).

What is a conceptual site model?

Conceptual site models were discussed in the 1996 ANPRM (61 FR 19432, May 1, 1996). EPA indicated the site investigations and remedy implementation are often most successful when based on a "conceptual site model." A conceptual site model is a three-dimensional picture of site conditions that conveys what is known or suspected about the sources, releases and release mechanisms, contaminant fate and transport, exposure pathways and potential receptors, and risks. The conceptual site model is based on the information available at any given time and will evolve as more information becomes available. The conceptual site model may be used to present hypotheses that additional investigations could confirm or refute, support risk-based decision-making, and aid in identification and design of potential remedial alternatives. The conceptual site model is not a mathematical or computer model, although these tools often prove helpful in visualizing current information and predicting future conditions. The conceptual site model can be documented by written descriptions of site conditions and supported by maps, cross sections, analytic data, diagrams of the site that illustrate actual or potential receptors, and other descriptive tools.

What is a remediation waste management site?

The HWIR-Media final rule (63 FR 65874, November 30, 1998) established a new type of remediation waste management facility, the remediation waste management site. A definition for the term remediation waste management site is added to 40 CFR 260.10. A remediation waste management site is defined as "a facility where an owner or operator is or will be treating, storing or disposing of hazardous remediation waste." [63 FR 65937, codified at 40 CFR 260.10]. Remediation waste management sites differ from those governing other hazardous waste management facilities in the following three respects [63 FR 65882]:

- □ Remediation waste management sites can be permitted using either the new RAP, or a traditional RCRA permit.
- □ If a remediation waste management site is located at a remediation-only facility, facility-wide corrective action is not required [63 FR 65938, codified at 40 CFR 264.1(j) and 264.101(d)].
- □ Remediation waste management sites must comply with newly stated performance standards that address general facility requirements, preparedness and prevention, and contingency planning and emergency procedures [63 FR 65938, codified at 40 CFR 264.1(j)].

What is a remediation-only facility?

The November 30, 1998, final HWIR-Media rule (63 FR 65874) uses the term “remediation-only facility” to refer to facilities that require RCRA permits solely because they manage hazardous remediation wastes (63 FR 65880). EPA included the definition of a remediation-only facility in this rule to clarify that a CAMU can be designated at a remediation-only facility that operates under a remedial action plan (RAP) or other permit, even though such a facility is not subject to the corrective action provisions as codified in 40 CFR 264.101 or RCRA section 3008(h).

What is a staging pile?

The November 30, 1998, final HWIR-Media rule (63 FR 65874) created a new type of hazardous waste management unit, the staging pile. Staging piles are intended for accumulation and temporary storage of solid, non-flowing hazardous remediation waste. Although not included under the definition of TU, a staging pile is very similar to a TU. The HWIR-Media final rule defines a “staging pile” as “an accumulation of solid, non-flowing remediation waste (as defined in [40 CFR] §260.10) that is not a containment building² and is used only during remedial operations for temporary storage at a facility” [63 FR 65939, codified at 40 CFR 264.554(a)]. This definition is added to 40 CFR 260.10.

In the CAMU Amendments final rule (67 FR 2962; January 22, 2002), EPA clarified (1) the scope of activities that can be conducted in a staging pile include mixing, sizing, blending, or other similar physical operations intended to prepare a waste for subsequent management or treatment; and (2) CAMUs used for storage and/or treatment *only* are subject to staging pile regulations provided they comply with staging pile time limits (67 FR 2997, 3028).

What is the contained-in policy?

The “contained-in” policy established that contaminated media (e.g., soil or ground water) that contain a listed hazardous waste must be managed as a hazardous waste. Until the medium no longer “contains” a hazardous waste (to be determined at the discretion of the regulator), it must be managed according to applicable hazardous waste management standards. Under this policy, soil or ground water deemed “clean” by the regulator may be returned to the ground without triggering RCRA Subtitle C requirements. However, full RCRA Subtitle C requirements are applicable until the contamination is removed from the medium.

This policy, applicable to remediation wastes, was first outlined in the EPA Memorandum “RCRA Regulatory Status of Contaminated Groundwater” (November 13, 1986). It has been updated many times since, most recently in the proposed HWIR-Media rule (61 FR 18795, April 29, 1996). While the contained-in policy has been codified for contaminated debris (51 FR 37225, August 18, 1992), it was not finalized as part of the final HWIR-Media rule for contaminated media. According to the debris rule, debris (including debris generated as a result of the performance of corrective action) that no longer “contains” a listed hazardous waste is excluded from RCRA Subtitle C regulation as long as the debris does not exhibit a characteristic of hazardous waste. The EPA or the authorized State determines on a case-by-case basis, the levels of hazardous constituents indicating that debris no longer contains a listed waste [40 CFR 261.3(f)(2)]. The EPA finalization of LDR treatment standards for hazardous contaminated soil as part of the LDR Phase IV final rule (63 FR 28604, May 26, 1998) may influence the establishment of contained-in levels. In addition, EPA’s anticipated HWIR for process waste may also influence the establishment of contained-in levels. The HWIR for process waste was re-proposed by EPA on November 19, 1999 (64 FR 63382).

What are the RCRA cleanup reforms?

In July 1999, the EPA initiated a series of RCRA cleanup reforms, where the goal is to foster faster, focused, and more efficient cleanups at RCRA sites that treat, store or dispose of hazardous waste and have potential environmental contamination (EPA 530-F-99-018). These reforms emphasize flexibility and trying new approaches to cleanup these facilities. The RCRA cleanup reforms are EPA’s comprehensive effort to address key impediments to cleanups, maximize program flexibility and spur progress toward a set of ambitious national cleanup goals. These goals focus on 1,712 RCRA facilities identified by EPA and the states warranting attention over the next several years because of the potential for unacceptable exposure to pollutants, and/or for groundwater contamination. The 1,712 facilities include many of those owned or operated by DOE. The goals, set by EPA under the 1993 Government Performance and Results Act (GPRA), are that by 2005, the states and EPA will verify and document that 95 percent of the 1,712 facilities will have “current human exposures under control,” and that 70 percent of these facilities will have “migration of contaminated groundwater under control.” EPA hopes to achieve these goals through a series of steps, the first of which was withdrawal of the bulk of the 1990 Subpart S proposed rule, which was announced in the *Federal Register* on October 7, 1999 (64 FR 54604). Other steps include issuance of specific guidance, prompt implementation of the HWIR-Media final rule (63 FR 65874, November 30, 1998), the CAMU Amendments (67 FR 2962, January 22, 2002), and the Post-Closure regulations (63 FR 56709, October 22, 1998), promoting

2 A containment building is a completely enclosed structure which houses an accumulation of non-containerized waste [40 CFR 264.1100].

use of appropriate authorities (including state and CERCLA authorities) and alternate approaches to expedite cleanup, providing comprehensive training on successful cleanup approaches, and enhancing community involvement including greater public access to information on cleanup activities. EPA has created a website that tracks its progress toward achieving GPRA (i.e., environmental indicator) goals that can be accessed at <http://www.epa.gov/epaoswer/hazwaste/ca/eis.htm>.

The RCRA Cleanup Reforms of 2001 (Ref. 6) reflect the ideas EPA heard from program implementors and stakeholders and introduce new initiatives to reinforce and build upon the 1999 Reforms. Specifically, the 2001 Reforms will:

- □ Pilot innovative approaches;
- □ Accelerate changes in culture;
- □ Connect communities to cleanups; and
- □ Capitalize on redevelopment potential.

EPA intends to continue work in other areas critical to meeting program goals, including continuing work with federally-owned facilities to help them meet their environmental indicator goals.

Questions of policy or questions requiring policy decisions will not be dealt with in EH-413 Information Briefs unless that policy has already been established through appropriate documentation. Please refer any questions concerning the subject material covered in this Information Brief to:

*Jerry Coalgate
Office of Environmental
Policy and Guidance
RCRA/CERCLA Division, EH-413
U.S. Department of Energy
1000 Independence Ave., S.W.
Washington, D.C. 20585
Phone: (202) 586-6075 or jerry.coalgate@eh.doe.gov*

